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PHOTOGRAPHIC
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NOTICES.

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NOTES.

Patenting.—To have an invention patented all over the world it is necessary to take out nearly seventy patents in as many different countries, and this will cost between three and four thousand pounds.

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A Correction.—When calling attention, in last issue, to the Portable Oxygen Syndicate, which had taken up a generator, we gave the name of the inventor as Mr. Suiter. We have since been informed that it is the invention of Mr. Sweetser.

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Lantern Slides on the Dome of St. Paul's Cathedral.—During the Jubilee illuminations this month, search lights will be erected at various points so as to illuminate the upper portion of St. Paul's Cathedral, and, in addition to this, it is the intention to project slides illustrative of the chief events in the Queen's reign on the dome of the Cathedral.

Backed Plates.—In future ready backed plates are to be issued by the Paget Plate Company. The backing is orange collodion, which does not interfere with the viewing of the negative in ruby light at the time of development. We understand that the backed plates are to be sold without any advance in prices.

◆ ◆ ◆

"Cycle and Camera."—This is the name of a new weekly which has been published, at one penny, by the Camera Publications, Limited, of 19, Southampton Buildings, Chancery Lane, W.C. It is conducted by Messrs. Robert L. Jefferson and Walter D. Welford—the former is the well-known photo-cyclist, who has performed several sensational long distance tours in remote parts of the world. The latter is well-known in photographic circles, and is also a cyclist of note. High-class illustrations, chit-chat, and prize competitions are among the features set forth.

◆ ◆ ◆

Crystal Palace Photographic Exhibition.—At the exhibition opened at the Crystal Palace last month, is to be found an interesting collection of historical apparatus and pictures in connection with the photographic art-science. The apparatus and collection of photographs have been collated by Mr. E. W. Foxlee, who has at very short notice been able to procure on loan from various parts of the country a good representative collection of early products. X-ray demonstrations, and projections of animated photographs are given daily, and a fine sample of colour photography is shown by means of Mr. Ives' instrument, which is termed Kromskop.

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The Best Artificial Light. — Professor Crookes has called attention to the fact that the best form of artificial light is one containing little or no ultra-violet rays, no excess of yellow rays, and just sufficient red light to communicate a warm, pleasant tone to objects around; that light which is more than normally rich in violet and ultra-violet rays is injurious to the eyes, contributing in time to a partial destruction of the fibres of the crystalline lens, and, when excessive, producing erythema and symptoms resembling those of sunstroke—workmen in electric light works, if frequently exposed to powerful arc lights, being affected in this way. It is not desirable, however, that the light should be too rich in yellow rays, as these temporarily destroy the erythrosin or photo-sensitive substance of the retina, producing great fatigue of the nerve.

The Paris Fire.

THE sad news of the late disastrous fire at Paris where so many lives were lost is known far and wide. Its cause has been attributed to the optical lantern, and many theories have been afloat, amongst them being the bursting of a cylinder containing compressed gas, the explosion of a vessel containing ether, the celluloid film used in connection with the cinematograph, the falling over of a lamp, etc.

From many enquiries instituted we learn on good authority that the cause was indeed connected with the lantern, which formed one of the attractions at the bazaar. An ether saturator of French manufacture was used in the lantern for displaying the cinematographs, and the film after it passed through the lantern was caught up in a basket placed beneath the front of the apparatus. From some unexplained cause the light seems to have suddenly gone out, and one report is that a match was immediately struck by some one standing near and applied to the jet, which at once again burned properly, but the match—that was said to have been thrown on the floor where it came in connection with some of the folds of film. Another report is that a leak of ether at the saturator blazed up and immediately communicated itself to the film. Proceedings have been instituted against the proprietor and the two operators of the cinematograph.

On the 24th ult. when about twenty persons were viewing cinematographic pictures at a shop on the Boulevard Poissonnière, Paris, the focused heat from the illuminant set fire to the film and created a momentary scare which caused a panic, but no one was injured. Such mishaps only occur through carelessness.

A Novel Chronophotographic Camera.

SINCE the introduction of ribbon photography, by means of which successive pictures are rapidly made of moving objects upon a long ribbon or strip of sensitised film, various devices have been invented, some complicated and others very simple, for the production of the pictures and the manipulation of the picture ribbon.

In the engraving Fig. I. is illustrated quite a novel camera, the invention of G. Francis Jenkins, for making accurately the continuous series of pictures. Instead of using a rotary disc shutter with radial apertures and a fixed lens, this camera has a single opening in the front, the size of the aperture being regulated at its rear end by a diaphragm disc having radial slots cut therein of varying widths. The operator is thereby enabled to govern the amount of light admitted to the lenses according to the subject to be photographed and the length of exposure desired. This disc is rotated by hand on its axis like an ordinary stop in a wide angle lens.

Back of the diaphragm disc is observed the battery of lenses, each of the same focus, arranged in a circle, adjoining each other upon a rotating disc, the axis of which extends rearward, terminating in a bevel gear wheel, which meshes into a side bevel gear wheel, fixed upon the upper shaft, suitably geared to the main driving shaft. The main shaft may be operated by a crank on the outside of the box, by hand or by any suitable motor like a spring. The sensitised celluloid perforated ribbon film will be noticed passing downward near the front end of the camera in front of the exposure tension plate, the square aperture in which is exactly in line with the front aperture in the box. From this point the film, after exposure, passes downward between the sprocket wheel and pressure roller to the winding reel in the rear end of the camera, which is rotated by belt connection to a pulley on the upper shaft, and takes up the film ribbon as rapidly as it is exposed. The feed roll for the supply of fresh film is not shown, but may be located in the rear of the camera over the winding reel.

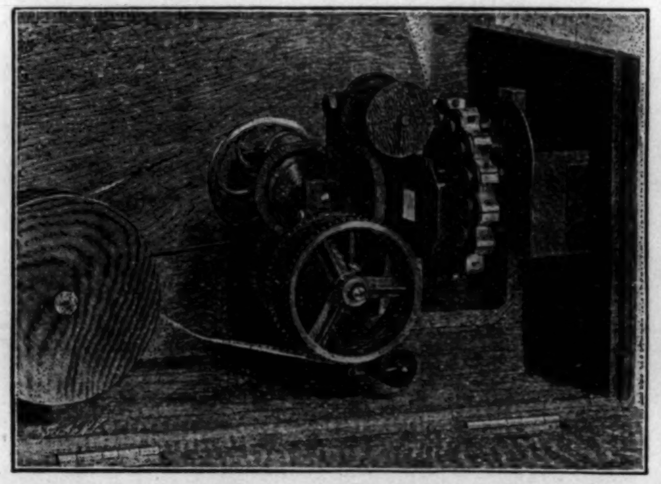

Fig. I.

The operation may now be readily understood; to obtain successive pictures of a particular object, the camera is placed on a stand or tripod, the crank on the outside is then rotated, which causes the film to travel downward continuously, with exactly the same speed that the lenses rotate, so that at every fraction of a second that it takes for each lens to pass behind the camera aperture, an impression of light is made on the downwardly moving film, and as they (the lenses and film) both move in unison, it follows that a sharp picture must be the result, while the brilliancy of the illumination is at its maximum. The camera can be carried about as readily as any other camera, and in practice it is found the motion of the hand-operated crank is sufficiently uniform to permit of the proper reproduction of motion by the positive pictures when projected on the screen.

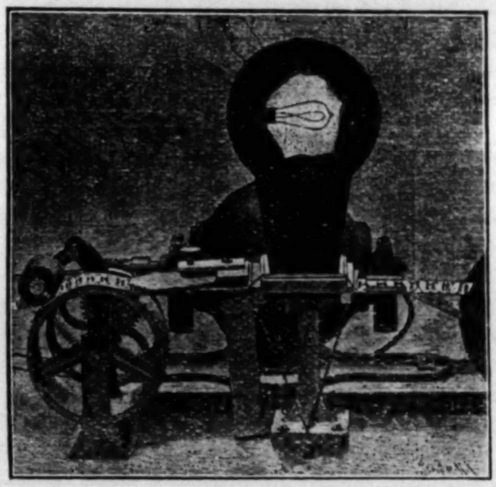

Fig. II.

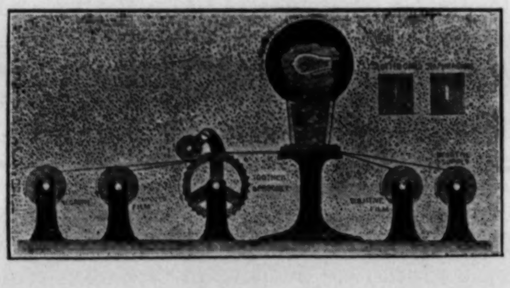

Fig. III.

The Figures II. and III. show the method of printing the positive ribbon pictures from the negative by means of artificial light, also designed by Mr. Jenkins. It consists of reels supported on suitable upright standards holding respectively the sensitive ribbon film and the negative film. The film from the negative supply reel is carried along over the sensitive film reel and both pass in contact, in continuous motion, under an exposing chamber illuminated by white light, either incandescent, electric light, or a Welsbach gas light, thence over the toothed sprocket driving wheel to the winding reels, the exposed film being wound first. It will be noticed that the reels are interchangeable, hence to make duplicate copies it is only necessary to remove the negative spool from the winding up end to the supply spool standard of the apparatus and begin over again. The perforations in the edges of the film are of specially square shape and give the square sprocket teeth of the propelling pulley a better pull on the film. The teeth pass through the perforations of both films, causing both to move exactly the same, and at all times to keep in perfect register. The speed of the film passing under the exposing chamber must be uniform, and this is obtained by propelling the sprocket wheel by an electric motor or by a spring motor. The electric motor is seen behind the light chamber in the larger of the two engravings.

The axle of the motor has worm gear operating a cog wheel on the main shaft. The V shaped elastic band holds the frame (in which is a ground glass) in contact with the films, producing a sort of tension on the film. To the left of the light chamber is a supplementary tension, adjusted by screw nuts, as shown.

Referring to the diagram illustration will be seen two slotted diaphragm cards. These are placed over the ground glass just mentioned, at the bottom of the light chamber, and are for the purpose of regulating the amount of light that acts on the negative. If the negative film, as a whole, should be thin, then the card with the narrow slot is used, which allows a shorter exposure to be made, as the negative and film are passed under it. If the negative is full of density, then the narrow card is removed and the wider slotted card substituted, which allows a larger volume of light to act upon the negative film. The exposed film is wound around large open reels from its spool, and developed by passing through troughs of developer solutions.

The necessity of providing apparatus to quickly reproduce positive impressions from the negative ribbon films is one of the reasons why this simple device was invented, and its novelty consists in the fact that the film moves continuously under a uniform source of light without any intermittent motion or the use of shutters. The operation of exposing the film is carried on in a room illuminated by the usual ruby red light.—*Sci. Amer.*

Prominent Men in the Lantern World.

No. VIII.—Mr. A. R. SCHUTZ.

THE subject of our sketch is one of the active members of the British Astronomical Association, who, in the course of his teachings and lectures, employs the lantern to a great extent. His name, doubtless, suggests a foreign origin, so we may as well state that he was "made in Germany," on a small scale, fifty-two years ago, he having been born on a farm on the Westerwald, in the Province of Nassau—then a dukedom. His forefathers being well-to-do agriculturists on the one hand, and a long line of clergy on the other, young Mr. Schutz got a good national education as well as a good drilling in ploughing, sowing, and reaping.

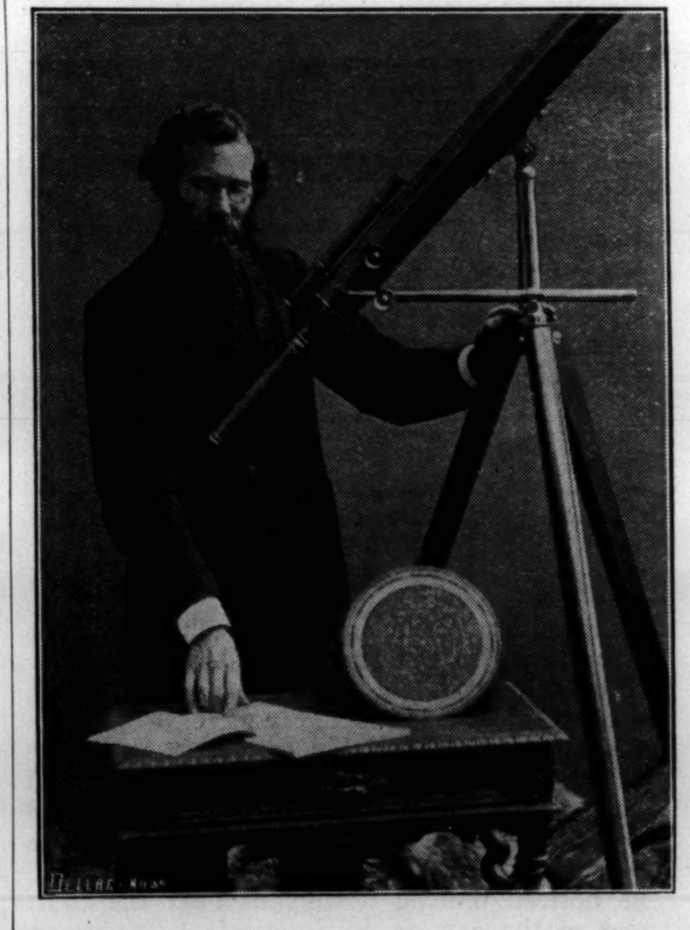

Photo by W. C. Bristow] *[Worthing.*

Small holdings in Germany are somewhat uncertain, and after a few bad crops and the cattle plague, they often get split up, and eventually pass into other hands. The farm in question being no exception, came to such an end, and Mr. Schutz being a musician of great talent, was recommended to come to England, where he was told he would "make his fortune" in that profession. Here he began his musical career, first at Brighton, and later at Clifton, Weston-Super-Mare, and Bath, but the greater part of his life has been spent in that pretty town called Worthing, where he has resided since 1869.

By nature Mr. Schutz is a philosopher, and has always ranged himself on the side of progress and heartily assisted any movement which seemed of benefit to the greatest number of mankind. In his young days, when he left his native village, he had the feeling that there was only one Christian church, but was soon after amazed at finding the thousand and one different parties who are in dire confusion. This he likens to a broken-up orchestra, each member choosing his own instrument and playing the tune he liked best. Strictly speaking, he says he belongs to the National Church, though he finds a lot of good endeavour and intentions in all, and that in one sense he considers himself as belonging to all, without adopting any particular name.

In his early life as a musician Mr. Schutz found many gaps when there was nothing to do in that profession, and being ever attracted by the beauties of nature and subjects bearing upon human life, he became an assiduous student in physiology, physiognomy, phrenology, spiritualism, and kindred subjects, but it appears that of all the sciences astronomy had the greatest charm for him, and this subject forms his hobby; or rather we might say that his hobby is to popularise this sublime science. To this end Mr. Schutz has written a good deal in the papers and periodicals, several pamphlets, and has also written a book called "The Celestial Symphony, or Music in the Sky." Personally, we have perused this work with great profit and pleasure, and readers will find a shilling well invested in such. It is published in London by Simpkin, Marshall & Co., of Stationers' Hall Court, and in Worthing by G. D. S. Kirshaw, of Warwick Street, or of the author, 21, Ann Street. The chief intention in writing this book was that others may be enabled to enjoy the same enjoyments as the author.

We feel that we must quote a few words from a recent letter received from Mr. Schutz for the benefit of our readers. He writes:—"If you wish to assist in the world's progress there is a place where you may do your best, and if you have anything good and useful to show or to tell, what can you find in this world to assist you better than the magic lantern? If you have a good lantern, a box full of good slides, and a heart full of your subject, why all you need then is a pointer in your hand, and a 'point' on your tongue, driven home with some common sense, and all goes off like magic. The lantern has *not* had its day by any means, its day is coming. Nine people out of every ten at present know nothing of the construction or use of this instrument, and in the field of education there are thousands labouring hard and moving slowly who will yet progress by giant strides when they become aware of the powerful aid and utility of the optical magic lantern."

The Lanternist's Practical Cyclopædia.—No. VIII.*

By CHARLES E. RENDLE.

CYLINDERS.—The steel cylinder, or bottle, as it is sometimes called, is made either of drawn steel—that is to say, a block of mild wrought steel is forced little by little into cylindrical form, or "lapwelded" steel. The former, though more costly is most popular. The difference of strength in the two makes is that the drawn cylinder stands first with its ultimate tensile strength of 66,000 lbs. against 54,000 lbs. to the square inch. The steel in the first case is strengthened in the drawing much in the same way as metal is hardened in the process of hammering. The strength of these small holders for the storage of compressed gases is almost beyond conception, and lanternists may rest assured that they are safer by 50 per cent. to manipulate than are the arrangements for home lighting with coal gas, and hundreds per cent. safer than the ordinary paraffin lamp. The gas cylinder has been brought to a state of perfection and safety in a very short space of time, due principally to simple experiments and reasoning. The fear of getting mixed gases in a bottle should no longer exist owing to the knowledge that the fittings to the oxygen and hydrogen cylinders are now made non-interchangeable, and if the rule be made imperative, the only paramount danger would be removed. Cylinders are tested to a pressure of from two to three times of what they are ever charged to. There are many fittings connected with these cylinders, some of which are most essential for successful working, such as the regulator when using a mixed jet, or an instrument for gauging the contents of a cylinder is most useful, especially whilst travelling.

CYCLORAMA.—A series of views in motion embracing various effects, as in nature.

CYCLOPÆDIA.—Readers are referred to page 180, Vol. VII. of the OPTICAL MAGIC LANTERN JOURNAL.

DAGUERRE.—The name of the inventor of the photographic process, known as the "Daguerreotype," and which consisted of producing pictures by the action of sunlight on polished metal plates. Although not meeting with universal success, he completed—what many another experimentalist had but attempted—the principle of the photographic art; the base as it were of the investigations and discoveries, in the development of photography for the past fifty-eight years, and his name will ever be associated—as it justly deserves—with such a valuable invention. Prior to the above, which happened in 1839, it may interest lanternists to bear in mind that "Daguerre" invented and perfected the "Diorama" at Paris, which he opened in 1822, his coadjutor being M. Bouton, and it is said it was whilst this exhibition was running that his photographic researches were made.

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Daguerreotype.—*See* Daguerre.

Dark Room.—An apartment destitute of light. In photography it is imperative to have access to such a room for sensitising and development, but in this case the dark room need only be a dark room as far as actinic light is concerned, and may be lighted by transparent coloured glass or lamps that the actinic rays cannot penetrate. In speaking of the "Dark Room," amateurs are often misled by thinking that because the light is obscured fresh air should also be obscured. This fallacy not only injures health, but stays successful progress in experiments. The photographic dark room should be as spacious as circumstances will allow, as well illuminated as it can be with safety, and evenly ventilated. Great care in this latter is essential, that the creation of dust be avoided.

Dead Black Varnish.—A useful dead black may be made by mixing together vegetable black 4 ounces, turpentine 4 ounces, gold size 2½ ounces. Two coats of this will produce a dead black surface, and if the first is applied sparingly, but evenly, when quite dry will take the second without much risk of its running.

Declamation.—The art of declaiming according to practised rules.—*See* Elocution.

Density of Gases.—Hydrogen being the lightest of gaseous elements is taken as the standpoint for the weights of all other gases in science work. As an instance, take a volume of hydrogen and a volume of oxygen; oxygen being sixteen times heavier than hydrogen, and hydrogen being the unit, it is therefore said the density of oxygen is sixteen.

Development.—Gradual growth. In photography it is the process of bringing into distinction the latent image. When the plate is removed from the slide in the dark room and held to the yellow light, there is no visible object upon it; it is there though we see it not, and the fact of its being there in a latent form requires a chemical agency to bring about its unfolding.

Diagram.—A sketch or drawing for demonstrating the subject or figure, that it may be better understood. A diagram to complete an explanation.

Diagramatic Slides. — Slides of diagrams, squares, circles, triangles, and general geometrical drawings. They may be made by coating plain glass with a solution of Canada balsam and benzole, and dried in a rack in a dust-tight room. When the film is hard it may be written upon with an ordinary fine pointed pen and black ink. Another way is to use sensitised lantern plates, upon which tracings can be made by using a steel point.

Diaphragm.—Any partition with an aperture through its centre, or a section of centre. More specially used in optical instruments for shutting out superfluous rays of light. The various stops belonging to a photographic lens are diaphragms.

Diffusion of Gases.—The law of the diffusion of gases causes all gaseous bodies irrespective of their weight to co-mingle or mix. The diffusive rates of the various gases are inversely proportionate to the square root of their respective densities. Example - Take a jar of oxygen and a jar of hydrogen, of equal bulk, the gravity of the oxygen is sixteen, and of the hydrogen one, place the jars mouth to mouth, so that the lightest gas is at the top. Now by experiment it may be seen that four volumes of the heavier gas has mixed into the lighter gas, during the same time that it has taken for one volume of the lighter gas to intermingle with the heavier, 4 being the square of 16, of the oxygen. The hydrogen being the unit, one—the square of one being one—or again, take a vessel with a porous partition at its centre, fill the upper portion with hydrogen, and the lower with oxygen, the heavier gas oxygen will penetrate upward, and the hydrogen or lighter gas downward, and thus uniformly mix.

Diorama.—An exhibition of pictures, partly illuminated by powerful reflected lights hidden from view. At a theatre or other place of entertainment, the pictures with their dioramic effects are placed within the proscenium, and viewed from the auditorium.

Disc, or Disk.—A flat circular surface. In lantern work, the disc is always associated with the white circle thrown on the screen by the lantern, and generally speaking, when the disc is clear and free from shadow, the light is perfectly centred.—*See* Centreing Light.

Dissolving Taps.—There are several makes of these gas passes, their purpose being to shut off the supplies of the gases in one lantern and open them in another simultaneously. What is called the three-way dissolving tap, is used for a pair of fountain spirit jets, or what is called the oxy-calcium light. A six-way dissolving tap is used for bi-unials, they having separate channels for oxygen and hydrogen. For triple lanterns, sometimes one six-way and one four-way dissolving taps are used, and sometimes three-four-way taps—this latter is generally acknowledged to be preferred when working with three lanterns. No dissolving tap is required for single lanterns, because the light must remain constant throughout.

(*To be continued.*)

How to Darken a Tall Window for a Lantern Exhibition.

By S.

OFT-TIMES it becomes necessary to darken tall windows when the blinds with which they are fitted are not of sufficient opacity. It might be suggested that they can easily be covered with brown paper, but in the case of a high window this presupposes a ladder in order to reach the top and such is not always at hand. I was recently in this predicament, but I soon solved the problem, and my means of doing so may perhaps assist others.

First I let the blind down, then I pinned brown opaque paper to the foot of this blind, which I then rolled up a little, and to the bottom of the sheets of paper pinned others which in turn were hauled up as the blind was rolled up. To this again other sheets were pinned and pulled up, and so on until they reached the top, when I found it quite a success.

Luminous Apparitions.

THE proprietor of *La Nature* recently supplied particulars of a private entertainment which took place at his residence, at which Mr. Radiquet showed and explained a new application of the X rays.

A room was placed at the disposal (for preparation purposes) of Mr. Radiquet, and when the audience were ushered in nothing of a mechanical nature was to be seen save a magic-lantern-sort-of-looking-apparatus, covered with a cloth, which stood in one corner. The room contained a glass chandelier and glass and porcelain vases filled with flowers.

The lights were extinguished as for a spiritualistic séance. A kind of crackling was heard, then suddenly a luminous hand passed slowly through space, ascending and descending above the audience; luminous violins also danced about the place. Then a big globe descended like a ball of phosphorus, swinging to and fro as a pendulum, and a luminous bell rang. Suddenly, at a corner of the salon, a mirror seemed ablaze, and the vases of flowers grew bright; chandeliers sparkled, a table covered with cups and glasses was illuminated; and the room itself, lately so dark, was lighted by

phosphorescent gleams.

Presently all again grew dark, and a phosphorescent decanter appeared and remained suspended in the middle of the room. A bluish tray came slowly below the decanter, and a brilliant glass placed itself on the tray. Finally, a spoon and a sugar basin made their appearance; phosphorescent pieces of sugar left the basin one by one and fell into the glass. The decanter moved, and as though influenced by some hidden power turned to pour water into the glass; then the spoon became animated, turning sharply in the liquid to melt the sugar. Suddenly this vanished, and in a corner, before a velvet door-curtain, there appeared a human form, with a greenish tint of paleness. In a short time the bust vanished in fragments, and nothing remained but the lower part of the figure, which finally vanished.

A luminous bouquet then appeared in the centre of the room with a blue bandrol, on which was inscribed

"X Rays."

The electric light was then immediately turned on, and the audience were again in good light. The entertainer exclaimed "that is the end! No spiritualism, nothing occult, nothing supernatural. X rays, nothing but X rays." The X rays, invisible to the eye, make fluorescent substances phosphorescent, especially screens coated with platino-cyanide. Under the action of X rays glass and crystal also shine in darkness. The X rays apparatus was hidden behind a black screen, and its presence is not even guessed, and yet through this screen the rays pass and illumine the glass objects only; thus, if you hold a glass decanter in your hand all the facets grow phosphorescent, and in the darkness you will see the decanter move about in space, while your hand remains invisible; diamonds, enamels and porcelain act likewise.

To give a sensational entertainment only three operators are required. Glass and porcelain objects, confette in cyanuretted and platinised paper, serpents with fluorescent coatings, fire-flies, flowers in glass, luminous gloves, etc., may be advantageously employed.

Animated Pictures.

By EDMUND A. ROBINS

THERE is much difficulty in assigning an actual inventor, or a precise date to the first attempt at reproduction of the very varied movements of animated and inanimated objects, and to show that the idea is not of recent origin, the following verse of Titus Lucretius Carus, in his work "De Rerum Nature," book iv., verse 766, published between 99–65 B.C., certainly presents the idea of a series of movements.

> Do not thou moreover wonder that the images appear to move,
> And appear in one order and time their legs and arms to use,
> For one disappears, and instead of it appears another
> Arranged in another way, and now appears each gesture to alter,
> For you must understand that this takes place in the quickest time.

To come back to modern times, in the journal of the Royal Institution appears a statement by Faraday, which shows that he recognised the principle, and the "stroboscope" of Stampfers and the "phemacistoscope" of Plateau, the blind philosopher, were probably suggested by the above note; the last named instrument is described by Plateau, in a work published in 1829. In 1843 an instrument was made by Wchatius, which showed moving pictures to a number of people at once, the pictures being drawn upon a disc of glass, the "zoetrope" or so-called "wheel of life," which consisted of a number of pictures painted round the circumference of a disc, each picture representing one of the successive stages of the movement intended to be represented. Around the edge of the disc radial slits were cut one between each pair of pictures, and the whole was then whirled in front of a mirror, the reflection being viewed through the slits. This reproduced the motion in a comparatively life-like manner, but as animal motion had not been analysed, the drawings were mere guess work.

The next and greatest improvement was by

Ead. Muybridge

who commenced his experiments in 1872. He took a number of photographs by means of a battery of cameras arranged side-by-side, the exposing being effected by means of a specially designed machine, which electrically released the shutters of the cameras successively, and as some horses galloping at full speed will for a short time cover fifty-six to fifty-eight feet in a second of time, it will be seen that the time of exposure had to be exceedingly short. The shortest exposure employed by Muybridge was about 6,000th of a second.

Muybridge startled the whole of the artistic world by showing the exceedingly curious positions in which a horse places its legs while galloping, trotting, etc., and which were declared to be absolutely impossible at the time when Muybridge first published his results, being totally different to the positions portrayed by artists from time immemorial. Drawings from these photographs he combined in an instrument which was known as the "zoo-proxiscope," which proved without a doubt that his photographs were absolutely true to nature.

This was the first successful attempt to reproduce

animal motion upon the screen.

About this time Professor Marey had been able to make successive exposures with far less intervals of time, and devised a means whereby he could photograph twenty successive phases of a single vibration of the wing of an insect.

The next important invention was that of Edison, the "kinetoscope." He improved upon Muybridge by photographing all the successive pictures upon one band of celluloid film, the length of which was about 40 to 50 feet, each picture being about 1 inch square; this was joined into an endless band, and run beneath a lens in order to magnify the image, a light, generally an incandescent electric lamp with parabolic reflector, being placed beneath the film. Above the film was a rapidly revolving disc of metal having in it a narrow slot; this was so arranged that as the picture came into position between the lens and lamp, the slot was also in the same position. When the band was so run that the pictures appeared not less than thirty per second, they were blended together on the retina of the eye by retention of vision, and

appeared as one picture,

having all the movements of nature. The great drawback to this was the short time of illumination of the picture, about 7,000th part of a second, and therefore the total illumination was very small and the picture ill-defined.

In 1895, Messrs. Lumiere brought out their "Cinematograph." This was a very great improvement upon anything that had been seen before, and has remained one of the best up to the present time; in their system the special features are a mechanism whereby the film is at rest during illumination, and a means of projecting upon the screen. The film is at rest during about two-thirds of the time of passage of each picture; during the remainder of the time the film is grasped by a set of teeth which fit into perforations along the edges of the film, the light being cut off by a revolving shutter during the movement of the picture from one position to another. Under these conditions

fifteen images per second

are all that are necessary to give continuous motion.

Early in 1896 the "Theatrograph" was introduced by Mr. R. W. Paul. In this machine the film is drawn forward by two rollers, on the surface of which are pins fitting in perforations in the films. The rollers are moved forward the distance of a picture by means of a curiously shaped cam; the picture is steady during production, which occupies about half the time of passage, the movement being shut off by means of a shutter.

Since the middle of last year new machines have appeared every month—almost every week—but they all, including the two mentioned above, suffer from the same disadvantage, the slight jumping of the picture and the flicker. The first is mainly due to the inaccuracy of the perforations of the film, but as the pictures themselves are only about 1 inch by $\frac{3}{4}$-inch, and are magnified to 12 feet by 10 feet, the movement in the picture of one hundredth of an inch is sufficient to cause a most unpleasant jump on the screen; it will thus be seen that the difficulties in the way of steady pictures are enormous. The flicker is caused by the shutter which is used to cut off the illumination during the movement of the film from one picture to the next, and is due to the sudden change from light to dark, and back again to light. The ideal machine will be one which carries the film forward so rapidly that the eye is unable to follow it, and in which no shutter is used.

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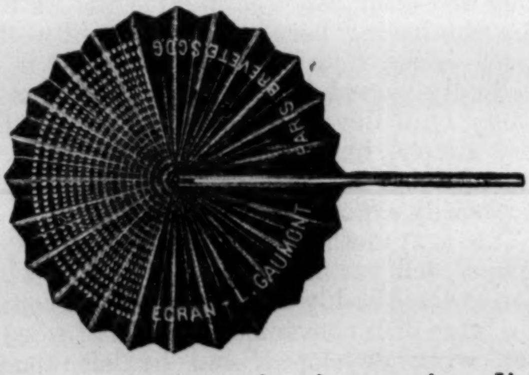
The marvellous accuracy of these pictures in depicting natural phenomena, etc., is often demonstrated in a curious manner by the audience, a sea-scene in which a large wave breaks through the mouth of a cave, the realism of which is so great that a **shudder can hardly be suppressed,** and the splash can be quite easily imagined. In another, where a turn out of a fire engine was being shown, the engine dashes down the street towards the audience and appears to come right upon them. On one occasion, an old lady in the audience, quite unable to suppress a scream, started up in her seat and tried to scramble out, and in doing so knocked over the person behind her in her endeavour to get away from the horses; many more cases of the same sort have been known.

Since the above was written, the arrival and exhibition of the "biograph" has given a great impetus to the enthusiasm with which these pictures have been received. The "biograph" projects a large sized picture, the actual size of the transparency being about $3\frac{1}{4}$ by $3\frac{1}{4}$, and in lengths of 250 feet.

* * *

Counteracting Flicker in Cinematographic Projections.

THE aims of the cinematographic engineer has been to construct an apparatus which will project animated pictures totally devoid of that unpleasant flicker occasioned by the quick changes from dark to light, and several machines now on the market have this unpleasant movement reduced to a minimum. The latest invention to this end is not in the machine itself, but in the form of an inexpensive adjunct after the style of a folding fan, the upper portion of which is pierced with a number of square holes, as shown in the illustration.



These appliances, which can be sold for about £1 per 100, are held up between the eyes and

To come back to modern times, in the journal of the Royal Institution appears a statement by Faraday, which shows that he recognised the principle, and the "stroboscope" of Stampfers and the "phemacistoscope" of Plateau, the blind philosopher, were probably suggested by the above note; the last named instrument is described by Plateau, in a work published in 1829. In 1843 an instrument was made by Wcbatius, which showed moving pictures to a number of people at once, the pictures being drawn upon a disc of glass, the "zoetrope" or so-called "wheel of life," which consisted of a number of pictures painted round the circumference of a disc, each picture representing one of the successive stages of the movement intended to be represented. Around the edge of the disc radial slits were cut one between each pair of pictures, and the whole was then whirled in front of a mirror, the reflection being viewed through the slits. This reproduced the motion in a comparatively life-like manner, but as animal motion had not been analysed, the drawings were mere guess work.

The next and greatest improvement was by

Ead. Muybridge

who commenced his experiments in 1872. He took a number of photographs by means of a battery of cameras arranged side-by-side, the exposing being effected by means of a specially designed machine, which electrically released the shutters of the cameras successively, and as some horses galloping at full speed will for a short time cover fifty-six to fifty-eight feet in a second of time, it will be seen that the time of exposure had to be exceedingly short. The shortest exposure employed by Muybridge was about 6,000th of a second.

Muybridge startled the whole of the artistic world by showing the exceedingly curious positions in which a horse places its legs while galloping, trotting, etc., and which were declared to be absolutely impossible at the time when Muybridge first published his results, being totally different to the positions portrayed by artists from time immemorial. Drawings from these photographs he combined in an instrument which was known as the "zoopraxiscope," which proved without a doubt that his photographs were absolutely true to nature.

This was the first successful attempt to reproduce

animal motion upon the screen.

About this time Professor Marey had been able to make successive exposures with far less intervals of time, and devised a means whereby he could photograph twenty successive phases of a single vibration of the wing of an insect.

The next important invention was that of Edison, the "kinetoscope." He improved upon Muybridge by photographing all the successive pictures upon one band of celluloid film, the length of which was about 40 to 50 feet, each picture being about 1 inch square; this was joined into an endless band, and run beneath a lens in order to magnify the image, a light, generally an incandescent electric lamp with parabolic reflector, being placed beneath the film. Above the film was a rapidly revolving disc of metal having in it a narrow slot; this was so arranged that as the picture came into position between the lens and lamp, the slot was also in the same position. When the band was so run that the pictures appeared not less than thirty per second, they were blended together on the retina of the eye by retention of vision, and

appeared as one picture,

having all the movements of nature. The great drawback to this was the short time of illumination of the picture, about 7,000th part of a second, and therefore the total illumination was very small and the picture ill-defined.

In 1895, Messrs. Lumiere brought out their "Cinematograph." This was a very great improvement upon anything that had been seen before, and has remained one of the best up to the present time; in their system the special features are a mechanism whereby the film is at rest during illumination, and a means of projecting upon the screen. The film is at rest during about two-thirds of the time of passage of each picture; during the remainder of the time the film is grasped by a set of teeth which fit into perforations along the edges of the film, the light being cut off by a revolving shutter during the movement of the picture from one position to another. Under these conditions

fifteen images per second

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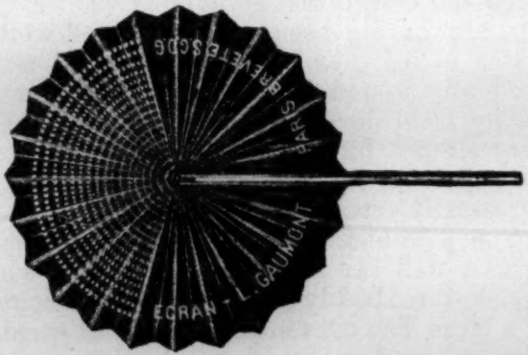

These appliances, which can be sold for about £1 per 100, are held up between the eyes and the projected picture, a slight to and fro motion being given to it, when it is claimed the projected picture will appear devoid of all flicker, and be pleasant to look upon. In France, the home of its invention, it goes under the name of "La Grille."

* * *

The Development of Kinetograph Films.

By EDMUND A. ROBINS.

THE enthusiasm with which the animated photographs were received by the public, has induced many of the manufacturers to place upon the market apparatus of most compact and portable forms, whereby films can be exposed and projected upon the screen by one and the same machine. This places in the hands of amateurs and others the possibility of producing their own pictures, which, of course, greatly enhances their value and interest in the operator's eyes, and the object of the present article is to give a slight outline of one or two methods whereby the films may be developed and printed ready for projection.

The difficulty of developing these films lies solely in their great length. For most machines upon the market the length is about 40 feet to 70 feet, and the importance of obtaining comparatively uniform density and freedom from fog and stain cannot be overestimated.

The original method employed for development, and which I believe even now is used with success, is to have two large and deep dishes containing the developer. The film having been previously well wetted in water is fed into one, and when all is in, is gradually passed from one to the other alternately until development is complete. This is very simple, but the film is very liable to be damaged by the very frequent handling it is necessarily exposed to.

The next method is to wind the film spirally upon a well varnished frame of wood, which is then lowered bodily into the developer contained in a large dish conveniently made of wood; the film, when developed, can be left upon the frame and washed, fixed, and washed and dried **without removal.** This method is very convenient, and reduces the risk of damage to a minimum, and the film is kept flat throughout all the operations. The size of frame to contain a 40 feet film closely wound is 18 inches by 21 inches by 2 inches, the longer sides upon which the film is wound must be well rounded and smoothed, and the whole well soaked in hot paraffin wax or else coated with three coats of good shellac varnish. This is placed in a dish 20 inches by 23 inches by 3 inches, if of wood, well paraffined or varnished blocks of wood about ¼-inch thick being placed on the frame at the corners, to prevent the film touching the bottom of the tray. The film should be fastened at the ends by means of drawing pins, and wound as tightly as possible as it expands slightly when wetted, and therefore may "sag" and get damaged.

Of course a large quantity of developer is required for these films, but if kept while not in use in a full well-stoppered bottle it may be used again and again, and therefore is economical. About 3 gallons of developer is required for a 40-feet film.

Another method, and perhaps the best of all, is to wind the film upon a glass drum which is capable of being raised or lowered vertically and rotated round a horizontal axis, the film is wound spirally upon this, and the whole rotated in a semi-circular enamelled iron trough containing the developer, water for washing being supplied from above by means of a spray. If a properly protected electric light be placed **in the interior** and the wires brought out through one axle, the density can be judged to a nicety. The whole of the operations can be carried out upon the drum, different trays being used for developing and fixing. The developer used must be one which is not easily oxidised, and from an economical point of view keeps well, and therefore pyro is "barred," but the following formula I can recommend as having in my hands produced fine results upon both Blair and Eastman kinetograph films; it is very rapid, clean, and keeps well.

Metol	400 grains.
Hydrokinone	400 „
Sodium sulphite	12 ounces
„ carbonate	8 „
Pot. bromide	160 grains.
Water	240 ounces.

The metol must be dissolved in water before the sulphite is added, and plenty of water must be used when the developer is mixed, or else the hydrokinone will be precipitated. In developing the negative the result to aim at is considerable density and freedom from fog and stain, and as the above developer acts rapidly, the operation will not be prolonged. Should the developer be too energetic it may be slowed by dilution with water. The film is fixed in a 20 per cent.

solution of hypo, and well washed, as is usual; the practice of soaking the film for a few minutes in a **4 per cent. solution of glycerine** is recommended, as it prevents the gelatine film from drying horny and curling up.

The films must dry spontaneously and not in alcohol, else the celluloid will be spoiled, the alcohol dissolving out the camphor used in the manufacture. The printing is done either in the machine itself or in a specially devised modification, and as this entirely depends upon the make of machine, I can give no directions as to exposure, but which of course must be uniform. For the transparencies the film used is a slow variety of the negative film, which is coated upon matt surfaced celluloid or else a gelatino-chloride film coated upon transparent celluloid, as made by the Blair Co. and the Eastman Co., the last suffers from the disadvantage that any **scratches** upon the celluloid show prominently upon the screen, and it also gives a warmish tone, but for some subjects it is very suitable especially those in which little or no sky appears. For the positives the foregoing developer does not give such good results as the following, which I can recommend for both Blair and Eastman films.

(A)	Hydrokinone	15 grains
	Sodium sulphite ..	75 ,,
	Water	5 ounces
(B)	Pot. Carbonate.. ..	90 grains
	Water	5 ounces
(C)	10 per cent. sol. of Pot. Bromide.	

For use take equal parts of (A) and (B), and a few minims of (C), and carry the development to the same extent as for a lantern slide, although if electric light is not used in the lantern the film should be kept rather thinner. The chloride film must not be developed too long else the high lights are liable to veil over and so spoil the brilliancy. The subsequent operations are the same as for the negatives.

Animated Photographs and Projecting Machines.

By the SHOWMAN.

DURING the past year or so no novelty connected with optical projection has secured so much of the attention of the public as what are known as animated photographs. This attention has been due in no small measure to curiosity, and signs are not wanting that it has already begun to flag. Of the earlier adventurers in exhibitions of this description, many, though not reaping what is sometimes figuratively described as a "golden harvest," were no doubt amply rewarded for their pains and temerity; while, on the other hand, a large number of later investors found nothing but **bitter disappointment** in store for them. At the present time, makers of this class of apparatus appear to be springing up on all sides, and, as the output of machines threatens before long greatly to exceed the demand, if it does not do so already, it follows that while some kinds of machines have perhaps "come to stay" on the principle of "the survival of the fittest," others are only likely to land their unfortunate proprietors in the bankruptcy court. So much having been said by way of introduction, it is proposed to review the subject generally in this article, and to point out what can be done to stem the already ebbing tide of popular favour.

Careful readers of the OPTICAL MAGIC LANTERN JOURNAL will have no difficulty in recollecting that two or perhaps three years ago there appeared several articles and communications on "The decline of lantern lectures." Treated as the subject was from various points of view, it was hardly to be expected that the different writers should agree on every minor point, but taken collectively they were fairly unanimous in declaring that the decline of lantern lectures owed its existence in a very great measure to the employment of inferior apparatus badly managed, and the exhibition of indifferent and often bad slides accompanied by a so-called lecture, incomplete, disjointed, devoid of interest, and badly delivered.

Unheedful of the warnings and advice then given, cinematograph users have **repeated the very mistakes** which have done so much harm to the lantern, and with a very similar result. Many persons who adopted the cinematograph, being neither mechanics nor lanternists, and possessing no knowledge of technicalities, were quite unable to tell a good machine from a bad one, so that many machines now in the hands of the public are very unpractical and quite unsuited for the purpose for which they are intended.

Films too are equally at fault, for, in a majority of cases, being purchased through the post without being seen and being non-returnable, the temptation to realise goods that, under more normal circumstances would be unsaleable, was too great to be resisted. Makers and dealers cannot be greatly blamed for this state of things, for with customers clamouring to be attended to, and orders in hand far ahead of the output, to "make hay while the sun shines" is only natural. Having defined the situation in a general way, it only remains to point out

where cinematograph exhibitions fail,

and to make various suggestions for their improvement. Some of these may, perhaps, unknown to the writer, be covered by one or another of the many patents on the subject which have recently been taken out, but when not so protected are hereby presented to any maker who cares to adopt them.

The first point that claims attention is the method of conducting exhibitions. At a lecture where a triple lantern is used, two persons, the operator and the lecturer, suffice to manage the whole affair; so that it may with reason be urged that a cinematograph should not require more than two, and of these two, one should undoubtedly occupy a position near the screen on the stage or platform, and act as lecturer.

A cinematograph exhibition is but an exhibition, and in no sense a lecture; but whether the various scenes require announcement, description or not, it always gives greater finish to the proceedings for one person to face the audience, rather than to speak from where the apparatus stands, besides keeping the audience more in touch with what is going on. Having placed one man on the stage to announce the pictures and enliven the proceedings with such humour as he may have at command, there only remains one person to work the apparatus, and this brings the second point into consideration, viz., that every apparatus should be workable by one person. At present, many machines only fulfil this condition with great inconvenience, but

for handiness

the following points may be noted.

1. The price of every machine should include a convenient, firm, but portable stand, which should not be in the form of a photographic tripod, but should be made of iron, wood, or any other approved material, so long as it is substantial, provided with a good tilting arrangement, and an attachment for the driving wheel. As the machine is delicately constructed, and still somewhat an object of curiosity, it might also be well to provide a wooden cover fitted with a spring lock, so that the entire machine may be instantly covered and uncovered *in situ* after the manner of a hand sewing machine. The use of such tables as chance may place at the service of the operator, and other makeshifts of this description, is to be unhesitatingly discouraged, as such arrangements are always responsible for more or less vibration.

2. The door of the body should be in its usual and most convenient place, *i.e.*, on the right hand side as the apparatus faces the screen. The driving wheel being attached to the stand, as before explained, will allow of this, and permit the operator to attend to the jet without going round to the opposite side. The driving wheel should also be placed as near the floor as may be convenient, as the whole structure may be regarded as an isosceles triangle of which the machine is the apex, and the nearer the base the driving wheel is, the less will any irregularity in its motion disturb the upper portion.

3. There should be no alum tank or contrivance of this kind. Such are not only liable to cause mess and disfigurement of the brass and woodwork, but the knowledge that the film cannot be burnt leads to the slovenly habit of trying the picture on the screen in full view of the audience, so that an animated picture is first shown as a still one, which

completely destroys

the beauty of the illusion. During the operation of setting, the film should be protected and the light shut off by a metal shutter in front of the condenser, which should be worked by a knob, lever, milled head, or other contrivance on the driving side of the machine, and so placed that the operator can remove the shutter with one hand after the driving wheel has been started with the other, so that the picture will be in motion when first seen. This shutter should not be relied upon to darken the screen, but each film should be furnished with an opaque tail-piece, the length of ten or a dozen pictures, so that the screen would automatically become blank at the end of a film. This tail-piece would allow the operator time to close the shutter after the picture had disappeared, but before the film had quite run out, and avoid the flickering luminous blank now so often seen.

4. A setting gauge should be provided. Usually the operator sets the picture with which he starts between the lens and the condenser, an inconvenient process which causes many tiresome waits. As the photographs occur at regular distances on a ribbon of gelatine, the same purpose would be served with much greater rapidity if the fifth or sixth picture to the rear of the one with which a start is made, were used for setting purposes, and to allow of this an opening the exact size and shape of a picture should be provided in a thin brass plate,

and so placed that when the setting picture exactly corresponds with the setting gauge, the starting picture should equally correspond with the opening behind the lens. To facilitate this operation being performed when the shutter is in front of the condenser, a

small beam of light

from the jet should be thrown on to the setting gauge by a little mirror or prism fixed in the body of the machine above the condenser, and automatically uncovered and covered by the covering and uncovering of the condenser. Too much attention cannot be paid to the attainment of quick setting, and it is a point which most manufacturers seem to have overlooked, the result being that a picture lasting forty-five seconds, succeeded by a wait of about two minutes, robs shows of this kind of much of the pleasure they would otherwise afford. Attempts have been made to mend matters by throwing on the screen the title of the next subject, and by exhibiting still views between the animated ones, but these methods are objectionable, as the title can be read in far less time than is taken up in setting a film, and still pictures make a second person at the apparatus necessary, which should be avoided, if only because one would get in the way of the other. Again, at such an exhibition an audience expects to see animated photos, and not to have the time taken up with ordinary lantern views.

However perfect the machine, good films are, of course, equally necessary, and up to the present these have been, unfortunately, few and far between. Irregular running of the machine, which exposes the negative, will be reproduced in the projected positive, as also will any disturbance arising from the vibration caused by passing vehicles, etc. Apart from this there is a

want of beauty

in animated photographs from the fact that they depend on the reproduction of street scenes and others in which moving objects predominate—simple landscape subjects, which are perhaps the most beautiful of all, being quite out of the question.

Many subjects are far too crowded with figures, and often a head and shoulders will almost hide the view. It is to be hoped that films will improve in quality as they decrease in price. The usual methods of judging a photograph can be applied to a film, and its regularity can be tested by laying a few feet flat upon a table and placing a two-feet rule on it so that one end exactly corresponds with the end of a picture. Notice in what position with relation to the picture the other end comes, and repeat the operation on another part of the film. Obviously, if the film is perfectly regular, the measurement should be the same in every case, but if not, jumping will result, as the perforations do not allow for irregularities in exposure.

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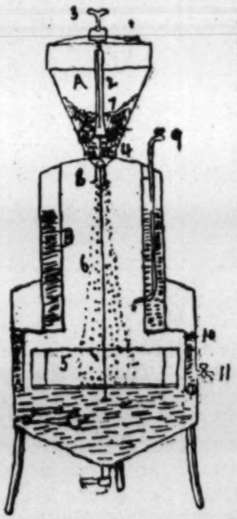
NEW APPARATUS.

"LE CAPUCIN" ACETYLENE GENERATOR.

This generator was invented by a French monk of the Capucin Order, Rev. Père Julien, of Mamers. It consists, essentially, of two concentric cylinders communicating only at their lower part, cylinder B and cylinder C. The former is surmounted by a calcium carbide reservoir (A), the lower part of which (4) is closed by a valve of a spheric shape. This valve can be secured by means of a screw (3) working at the top part of the rod (7), and released by loosening the said screw; and can be raised by action of the annular float (5) fixed at the lower end of the rod (7). During working of the apparatus the cylinder B is kept at the bottom of cylinder C by a quantity of water, which acts as a refrigerant for the gas compressed in the top part of cylinder B. The body of water in question is contained in a special reservoir —a kind of annular basin formed by a third cylinder (B) concentric with the two first, and arranged in such a way that it forms one with cylinder B on the shoulder of this last at the point 10. Below the number 10, the shoulder of cylinder B serves to protect the annular float (5) against the reiterated falls of the calcium carbide, which otherwise would finally overcharge it by accumulating on its head. Cylinder C, larger in diameter than cylinder B, may be equal in height or reduced, as in figure, to the proportions of a large vat. It contains the water necessary. I.—For the pressure of gas. II.—For the chemical reaction



which occurs at time of fall of the carbide into the water. III:—For the lime resulting from this reaction. The reservoir A being filled with pulverised, sifted calcium carbide, water is run into the annular reservoir which serves as jacket to cylinder B, the cock (9) shut, water is conveyed into cylinder C, and it is filled more or less according to the pressure of gas required; screw 3 is slightly loosened to allow the valve to work; the escape cock (9) opened, previously connected with the ducts and the apparatus works. Firstly, the water contained in the outer cyclinder C gradually invades the other inner cylinder B; soon it raises the annular float (5), and this last in its ascensional motion in turn raises the valve 8; then the calcium carbide falls into the water accompanied by immediate production of acetylene gas, which by its pressure expels water from the inner cylinder B into the space comprised between the sides of the cylinders B and C, until the instant when the float, being no longer raised, causes, by its weight, the valve to fall on its seat, and thus arrests the flow of carbide. If, in these circumstances, there is continuous consumption of gas, pressure decreasing in the inner cylinder, the water will enter and re-establish equilibrium; the float will again be raised, and the preceding phenomena will be automatically reproduced according as the gas is produced.

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Editorial Table.

Victorian Slide.—Mr. T. F. F. Weeks, of 263, Cann Hall Road, Leytonstone, has sent us a slide which he is issuing in connection with the Jubilee. The border is representative of a superb frame, in a recess on the upper part of which appears the following:—H.M.G.M. Victoria R., Queen of Great Britain and Ireland. In the centre Her Majesty is represented standing at a table with artistically draped curtains at either side. The features (only) are copied from one of Hayter's portraits of the Queen of 1837. There is a large amount of work on this slide, and great pains have been taken to make it attractive.

"The Year Book of Photography."—This annual, which is issued in connection with the *Photographic News*, has made its appearance for the thirty-eighth year. It is now under the editorship of Mr. E. J. Wall, F.R.P.S., and the greater portion of the literary seems to be written by that able editor. It is divided into five sections, viz.:—Progress and Practice—Facts and Formulæ—Gazetteer—Winter Work—and Novelties. There are also articles by Messrs. Randall, Child Bayley, Dockree, and Bottone. Including the advertisements, this volume comprises 644 pages.

Benetfink's Catalogue.—Messrs. Benetfink & Co., of Cheapside, have just issued a most comprehensive catalogue pertaining to photographic and lantern apparatus and sundries connected therewith, the prices of which appear particularly moderate. Many of the goods are of their own manufacture, such as extending cameras, of which they have three forms, several hand cameras of the magazine class, portable changing and developing tents, plate and print washers, brass fittings of various kinds, etc. The catalogue is also replete with apparatus of a standard class made by well-known makers.

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PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No.	Recent Patent Applications.
9294.	12th April, 1897. A. H. Barthez. An improved portable and automatic apparatus for the production of acetylene gas for lighting purposes.
9437.	13th April, 1897. M. Larenz. Improvements in or relating to the displaying of series of representations of moving objects.
9762.	17th April, 1897. J. G. A. Kitchen. Improvements in burners for acetylene.
9763.	17th April, 1897. J. G. A. Kitchen. Improvements in or connected with portable generators for producing acetylene from calcium carbide.
9885.	20th April, 1897. A. Lewino and W. L. Isaacs. Animas opticon.
9928.	20th April, 1897. C. Crastin and G. Baldwin. An improved acetylene gas generator, chiefly designed for application to a portable lamp, but also applicable for other purposes.
9932.	20th April, 1897. H. H. Lake. (P. Picard, France.) Improvements in apparatus for projecting representations of opaque bodies upon a screen.
9959.	21st April, 1897. R. Henderson. Improvements in apparatus for transmitting representations of processions and other moving bodies.
10028.	22nd April, 1897. W. G. Griffith. A toy or apparatus for producing an optical illusion.
10053.	22nd April, 1897. W. Reeves. A compound multiplex kaleidoscope. Complete.
10103.	22nd April, 1897. J. M. M. Rosenburg. Improvements in or relating to apparatus for the production of acetylene gas.
10186.	23rd April, 1897. D. C. Marency. Improvements in apparatus for generating acetylene gas. Complete.
10278.	24th April, 1897. E. Guitton. Improved means and appliances for reproducing representations of persons or objects to a distant screen for grotesque scenes.
10310.	26th April, 1897. R. W. Paul. Improvements in apparatus for exhibiting animated photographs.

10603. 28th April, 1897. B. Acres. Improvements in apparatus for taking, viewing, and projecting photographs of moving objects.

10686. 29th April, 1897. J. J. Patterson. Improvements in apparatus for generating acetylene gas. (Date applied for under Patents, etc., Act, 1883. Sec. 103, 22nd December, 1896, being date of application in United States.)

10713. 29th April, 1897. J. Green, Sen., and J. Green, Jun. Lantern slides for producing drawing effects and representations of real life.

11163. 5th May, 1897. W. J. Coles. Improvements in oxy-hydrogen jets for limelight and other purposes.

11273. 6th May, 1897. C. W. Baxter, C. Wray, and J. Oulton. Improvements in apparatus for taking and exhibiting kinetoscopic films for animated photographs.

11543. 10th May, 1897. S. D. Williams. Improvements in photographic reproduction of moving objects and in apparatus for viewing and exhibiting the photographs produced.

11764. 12th May, 1897. C. Smith. Improvements in acetylene gas lamps.

11918. 13th May, 1897. B. Acres. A safety appliance for kinematoscopes and the like.

11923. 13th May, 1897. C. M. Hepworth. Improvements in or relating to apparatus for exhibiting photographic pictures.

12052. 15th May, 1897. C. Grayson. Improvements in cameras for taking kinetoscopic and similar photographs or animated pictures.

12053. 15th May, 1897. J. Riley, W. Riley, and E. N. Raff. A new or improved apparatus for developing kinetoscopic, cinematograph, and similar photographic films.

SPECIFICATIONS PUBLISHED.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

1896.

5560 of 1896. Haegele. Optical projecting apparatus.

12047 of 1896. Faurchette. Method of and apparatus for generating acetylene gas.

13674 of 1896. Wrench. Cameras and optical lanterns.

15122 of 1896. Haviland, Holloway, Collier, and March. Apparatus for generating acetylene gas.

11639 of 1896. Maskeline. Apparatus for securing or exhibiting in series, records of successive phases of movement.

26765 of 1896, Lapipe. Apparatus for taking and projecting animated photographic views. (Date applied for under International Convention, 8th September, 1896.)

29442 of 1896. Barr and Halet. Means for casting illuminated representations of pictures and other objects on walls, pavements, and like surfaces, for advertising and other purposes.

1897.

5756 of 1897. Bean and Ringwood. Combined automatic generator, condenser, and holder for acetylene and other gases.

2976 of 1897. Dennis. Acetylene gas lamps and generators.

7782 of 1897. Lake (Ferraccin). Apparatus for automatically generating acetylene gas.

Correspondence.

ABUSES OF ACETYLENE.

To the Editor.

DEAR SIR,—In my opinion acetylene is likely to get a bad name owing to the carelessness and ignorance of some of the people using it. I have used acetylene for over twelve months, and have had no trouble whatever with it. Many people do not seem to have much idea of the fact that when generating gas for illuminating purposes some pressure is required in the container to prevent "firing back," and hence explosions. I am of opinion that with a reliable generator and a certain amount of common sense there is absolutely no danger in generating acetylene gas. But so long as people will do such peculiar things as we hear of with their apparatus whilst in use, so long must we expect accidents. Acetylene is, comparatively speaking, a new gas, and a number of people are scared because they hear of one or two accidents and do not know the cause. What would be said of the man who cut the top off a gas meter whilst the gas was on, and stood by with a light? I expect the verdict would be "temporarily insane," and I think this would also apply to some users of acetylene.

Personally speaking, I do not find there is the same amount of danger in generating acetylene that there is in using some of the saturators on the market, and according to what I can gather from the daily papers, the lamentable fire at the bazaar in Paris was caused by a saturator in use for a cinematograph entertainment.

If the packing inside the saturator once took fire, it would be like a blast furnace if the oxygen (which must be used with it to produce limelight) should have been turned on at the cylinder, which most likely it was. Only saturators are not new things and acetylene generators are, therefore they have got to suffer, and every little mishap that is caused by the carelessness or incompetence of the persons using them is "trotted" forth, and the whole thing is put down by the general public as "highly dangerous."

I think myself that it is much safer to store any quantity of calcium carbide in a building than it is to store some of the low flashing point petroleum that is kept in numberless places in the midst of other inflammable goods. The petroleum, on the one hand, only requires a very low degree of heat to produce an explosive vapour, whilst calcium carbide requires water to bring about the same result, and I rather think it is easier to keep a thing dry than it is to keep it cool. I expect, in the minds of the uninitiated, after the Paris catastrophe the cinematograph will be put down as being another "dangerous" apparatus, and if our local legislators are as sensible over that as they have been over calcium carbide and acetylene generators, we may expect to have to pay a license before we are allowed to give a cinematograph room on our premises.

I do not intend to discuss the merits of the different generators now being sold, but I certainly think the simplest constructed generator is the best, especially for lantern work, the only disadvantage in the very simplest being that they cannot be recharged whilst at work; at any rate, there is nothing in them to get out of order, the pressure is exceedingly low, and they are very portable, which is a great consideration to the travelling lanternist.

Yours truly,
HENRY J. WALKER.

RESIDENCES OF GREAT MEN.

To the Editor.

SIR,—In the April number of MAGIC LANTERN JOURNAL I note an article by Mr. A. Tranter respecting lantern slides of the residences of great men in literature, etc. Perhaps you will allow me to say I have about 70 such as he mentions. "London Homes of Celebrated Men and Women in Literature, Politics, Music, Drama," etc., all recently taken, some 50 or more are mentioned in Memorable Houses, which he quotes. If Mr. Tranter will write I will have a list sent him.

I remain, yours obediently,
HORATIO NELSON KING.

4, Avenue Road, Goldhawk Road,
London, W.,
May 13th, 1897.

ACETYLENE GAS EXPLOSION.

To the Editor.

DEAR SIR,—As we consider the letter of Mr. Miller and your remarks in your last issue are calculated to do our business some injury, and to retard the use of acetylene gas generally, we ask for space to enable us to say that we cannot hold ourselves responsible for the results of such foolish experiments as in the case cited. We enclose a copy of directions for use as sent with each generator, and we guarantee absolute safety if these are carried out. With regard to the dangers of a mixture of gas and air, when this pattern generator is started, if it is passed through the burners as we direct, no explosion can possibly occur, but to avoid the inconvenience of burning out this mixture, we have lately improved our lantern generator under two additional patents, so that all air is expelled before generation of gas commences, and shall, in a few days, be sending you one of the latest pattern for your inspection and test. Referring to your remarks, that you consider the instructions sent out with generators insufficient, we find that some people will not follow these, however simple they may be, and we are afraid that more elaborate instructions would rather tend to confuse than otherwise.

Yours faithfully,
May 21st, 1897. THORN & HODDLE.

[We await the arrival of the generator mentioned. It will doubtless be more convenient than the older pattern, but we have never considered that unsafe in practised hands.—ED.]

* * *

Notes and Queries.

F. G.—The firm has left the address; we can give no other information as to their whereabouts.

Gedding, Smith, Barclay, Beach, Douglas and others.—Up to the time of writing we have not seen the apparatus, so cannot venture any opinion at present.

Walter Hill.—If there is any objection to making the announcement openly, get a slide (Walter Tyler, Waterloo-road, S.E.) of a fancy plate with the inscription "Please remember the collection" printed on it. Project this on the screen and then hand round your collecting box or plate, keeping the slide on until the collection is finished.

John Webb.—Thanks, but hardly of sufficient interest; we note that you have been particularly observant as to details, and we hope to have a practical article from your pen in the near future.

Geo. Kilburn.—Your letter was handed to the business department, but although thanking you for the offer, it cannot at present be entertained as some copies were purchased a short time ago.

A. E. Ault.—We fail to see exactly where the trouble lies. The poor illumination may be from an indifferent light, try adjusting the burner further from the condenser, and also adjust the sub-stage condenser. You can form a rough idea *re* the condenser of long focus by using one half of your present one, remove that nearest the front.

H. Mason.—Although both carriers are ingenious and useful, they are both already on the market; the first is a fac-simile of Chadwick's Eclipse, and the second something after the style of the curtain slide introduced about a year ago by Mr. Davenport, and his is superior inasmuch as only one movement is required.

Alum Trough.—We presume this name will stick to it for some time to come, but the presence of alum is not necessary. If the trough be filled with ordinary water it is just as effective.

Thos. Roberts asks for an address in Brussels where he can obtain lantern slides of the general subjects of interest in that town. *Ans.*—There is no necessity to send abroad for such, as they may be obtained from almost any lantern dealer in this country. A good set of about fifty slides was published here some time ago. It is a mistake to suppose that it is necessary to send to the particular town where any slides are taken, as they can all be obtained here.

Condenser.—You complain that the rays are brought to a focus far short of the point which you want them to be. This is easily remedied by bringing the light closer to the condenser.

P. H. Grandin.—1. A search at Stationers' Hall is the only means of ascertaining; it would not be safe to copy without permission, which it is possible might be granted on application. 2. The arrangement suggested would answer, because each style of jet would be controlled by its own taps.

A. B. C.—1. Imagine an ordinary bi-unial curtain diaphragm with the bottom cut out and leaving the extreme sides, to which a supplemental shutter is fitted to slide after the style of a sluice-gate. It is, however, the subject of a patent. 2. See the stand on p. 212 of this journal for last December. 3. Full particulars of measurements will be found in this journal for September, 1894, p. 154. 4. Probably the second method mentioned will be most convenient. 5. No such table published, and to calculate it all would be very tedious; better decide upon the distance, hold the lens up and measure. 6. Telescopic tubes may be obtained from Messrs. Norman and Noakes, of Greenwich.

Messrs. Dunmore, Hepworth, Hiddon, Perkins and Bryce.—Sorry we have had to hold your interesting articles over till next month for want of space.